

## **REMARKS**

In response to the above-identified Office Action, Applicant amends the application and seeks reconsideration thereof. In this response, Applicant amends Claims 1-4, 6, 7, 9-11, and 13. Applicant cancels Claims 5, 8, and 12. Applicant adds new Claims 14 and 15. Accordingly, Claims 1-4, 6, 7, 9-11, and 13-15 are pending.

Attached hereto is a marked-up version of the changes made to the specification and claims by the current amendment. The attachment is captioned "Version With Markings To Show Changes Made."

### **I. Drawings**

The Examiner objects to the drawings under 37 C.F.R. 1.83(a) as not showing every feature of the invention specified in the claims. In response, Applicant submits herewith proposed Figures 5-7 showing the limitations directed towards a first buffer, a second buffer, a TDM stream, and an Ethernet packet. For consistency, Applicant also amends the specification, as indicated herein, to correspond with proposed Figures 5-7.

### **II. Claims Rejected Under 35 U.S.C. § 112**

The Examiner rejects Claims 1-13 under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Specifically, the Examiner refers to the limitation of "information which indicates an appropriate time at which to write the data into an outbound TDM stream." As Applicant's amended claim set no longer includes such a limitation, the rejection is moot.

The Examiner also states that the specification does not show a format for an Ethernet packet. In this regard, Applicant notes that proposed Figure 7, taken in conjunction with the text in paragraph [0013], describe the Ethernet packet in such a way as to enable one skilled in the art to make and/or use the embodiments recited in Applicant's claims.

The Examiner additionally states that the specification fails to provide a clear teaching of “double buffering.” In response, Applicant submits that proposed Figure 5, taken together with the text in paragraph [0009], describe the double buffering process in such a way as to enable one skilled in the art to make and/or use the embodiments recited in Applicant’s claims. More specifically, double buffering refers to writing data (incoming or outgoing) to a first buffer. The data is then written to a second buffer while data stored in the first buffer is being written into an Ethernet packet (incoming data) or into a TDM stream (outgoing data). If necessary, the double buffering process may be repeated, with each buffer taking turns receiving and writing data.

The Examiner also requests clarification as to whether steps 21 and 27 of Figure 3 collectively represent double buffering or whether each step (21 and 27) represents a double buffer. Applicant notes that each step (21 and 27) represents a distinct double buffering process. However, as noted in paragraph [0012], it is possible to double buffer incoming data, outgoing data, or both.

In light of the foregoing, Applicant respectfully requests withdrawal of the rejection of Claims 1-13.

The Examiner rejects Claims 1-13 under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention. Specifically, the Examiner requires clarification of the distinction between “Ethernet packet” and “Ethernet frame” in the claims. In response, Applicant notes that the amended claim set refers only to “Ethernet packet.” Thus, the rejection is moot.

Regarding Claim 4, the Examiner states that it is not clear what is being done to the extracted TDM frame, not clear what the second TDM stream is, and not clear where the second TDM stream is sent. Applicant notes that amended Claim 4 no longer recites extracting a TDM frame and that the second TDM stream is now described as a second, outbound (e.g., from the switch) TDM stream.

Accordingly, Applicant respectfully requests withdrawal of the rejection of Claims 1-13.

### **III. Claims Rejected Under 35 U.S.C. § 102(e)**

The Examiner rejects Claims 1, 2, 4, 5, 8-10, 12 and 13 under 35 U.S.C. 102(e) as being anticipated by U.S. Patent No. 6,215,789 to Keenan, et al. ("Keenan").

In order to anticipate a claim, the relied upon reference must disclose every limitation of the claim. Among other limitations, amended independent Claims 1, 4, and 10 each recite TDM block identification information in the Ethernet packet. Applicant submits that at least this limitation is not disclosed by Keenan.

In making the rejection, the Examiner relies on Keenan to show a scheme for transporting various data streams on an Ethernet LAN by packing the data into Ethernet packets, noting that it is inherent that the header information contains destination and source information. However, Applicant submits that Keenan does not disclose TDM block identification information (Applicant's specification, paragraph [0008]) in the Ethernet packet. Rather, Keenan specifically discloses that the Constant Bit Rate ("CBR") channels (e.g., for transporting delay sensitive information to a TDM Highway; Col. 16, lines 56-65) require no overhead octets (Col. 18, lines 36-40). Thus, the 38 octet overhead (Col. 17, lines 54-62) for each Ethernet packet (including the 14 octet Ethernet header) are in no way related to the CBR channels (e.g., TDM data), which do not require any overhead octets. Therefore, Keenan fails to disclose TDM block identification information in the Ethernet packet.

Accordingly, Applicant respectfully requests withdrawal of the rejection of amended independent Claims 1, 4, and 10. Claims 2, 5, 8, 9, 12, and 13 respectively depend from independent Claims 1, 4, and 10 and contain all of the respective limitations thereof. Thus, the rejected dependent claims are not anticipated at least for the same reasons as their respective independent claims.

### **IV. Claims Rejected Under 35 U.S.C. §103(a)**

The Examiner rejects Claims 3, 6, 7, and 11 under 35 U.S.C. 103(a) as being obvious over Keenan.

In order to render a claim obvious, the relied upon reference must teach or suggest every limitation of the claim such that the invention as a whole would have been obvious at the time the invention was made to one skilled in the art. Claims 3, 6, 7, and 11 each recite a first and second buffer to double buffer incoming and/or outgoing data.

In making the rejection, the Examiner acknowledges that Keenan does not specifically teach a first buffer and a second buffer but concludes that it would have been obvious to one skilled in the art to implement the queues of Keenan by employing two buffers for handling the TDM flow before writing it into an Ethernet packet.

In response, Applicant notes that Keenan specifically discloses that each queue is unidirectional and that two are required to provide a full-duplex flow of information, one to receive data from the Ethernet packets and one to transmit the data in the Ethernet packets (Col. 25, lines 53-61). Nowhere does Keenan teach or suggest the use of two buffers in concert to double buffer incoming and/or outgoing data, as described in Applicant's specification and discussed above in regards to the 35 U.S.C. 112 rejection. Thus, Keenan fails to teach or suggest every limitation of the rejected claims.

Accordingly, Applicant respectfully requests withdrawal of the rejection of Claims 3, 6, 7, and 11.

## CONCLUSION

In view of the foregoing, it is believed that all claims now pending (1) are in proper form, (2) are neither obvious nor anticipated by the relied upon art of record, and (3) are in condition for allowance. A Notice of Allowance is earnestly solicited at the earliest possible date. If the Examiner believes that a telephone conference would be useful in moving the application forward to allowance, the Examiner is encouraged to contact the undersigned at (310) 207-3800.

If necessary, the Commissioner is hereby authorized in this, concurrent and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2666 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17, particularly, extension of time fees.

Respectfully submitted,

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### CERTIFICATE OF MAILING:

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Box Fee Amendment, Assistant Commissioner for Patents, Washington, D.C. 20231, on November 1, 2002.

Lillian E. Rodriguez  
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November 1, 2002

**VERSION WITH MARKINGS TO SHOW CHANGES MADE  
IN THE SPECIFICATION**

Please enter the following amendment in paragraph [0004].

For example, some data is sent in a Time Division Multiplexing (“TDM”) stream, meaning that multiple data streams have been combined into one data stream (**Figure 6**). A TDM stream, by itself, is not compatible with an Ethernet switch, which transports Ethernet frames across the backplane. Ordinarily, separate TDM-compatible hardware is needed to transport TDM data streams. Thus, at least two system infrastructures would be needed.

Please enter the following amendment in paragraph [0006].

The features, aspects, and advantages of the present invention will become more fully apparent from the following Detailed Description and appended claims when taken in conjunction with the accompanying drawings in which:

**FIG. 1** is a flow chart of a method of packetizing TDM data as an Ethernet packet.

**FIG. 2** is a flow chart of a method of writing a TDM data stream into Ethernet frames.

**FIG. 3** is a flow chart of another method of writing a TDM data stream into Ethernet frames.

**FIG. 4** is a diagram of a switch capable of writing a TDM data stream into Ethernet frames.

**FIG. 5 is a block diagram of the line card of FIG. 4 containing first and second buffers to double buffer incoming and outgoing data.**

**FIG. 6 is an embodiment of a TDM stream combining data from four different data streams into a single data stream.**

**FIG. 7 is an embodiment of an Ethernet packet containing TDM block identification information in the lower bits of the destination field.**

Please enter the following amendment in paragraph [00013].

As mentioned in reference to **Figure 1**, an embodiment could also include writing destination information and identifying information pertaining to the TDM data into one field in the Ethernet frame and writing TDM data into another field in the Ethernet frame. Specifically, **Figure 3** shows writing the TDM data into the Ethernet frame 23, which includes writing TDM data into the payload field of the Ethernet frame, writing the TDM destination into the Ethernet destination field, and writing TDM block identification information in the lower bits of the destination field of the Ethernet frame (**Figure 7**). Although the TDM data is shown as being written to specific fields in the Ethernet frame, it is also contemplated that the TDM data may be written elsewhere or in a different arrangement.

Please enter the following amendment in paragraph [0015].

Similar to **Figures 1-3**, the switch 40 could include buffers in the line cards 44-46 to double buffer incoming and/or outgoing TDM data streams (**Figure 5**). In addition, the line cards 44-46 could include circuitry to write destination information and identifying information pertaining to the TDM data into one field in the Ethernet frame and TDM data into another field in the Ethernet frame.

## **IN THE CLAIMS**

Please amend the claims as follows:

- 1        1. (Amended) A method comprising:
  - 2              packetizing data [framed as] from an inbound Time Division Multiplexing (TDM) stream as
  - 3              an Ethernet packet having a header which includes TDM block identification information [which
  - 4              indicates an appropriate time at which to write the data into an outbound TDM stream].
  
- 1        2. (Amended) The method of Claim 1 wherein packetizing includes:
  - 2              writing [a TDM frame] data from the inbound TDM stream into a [first] payload field of an
  - 3              Ethernet [frame]packet; and

4 writing [information which indicates an appropriate time to insert the data into an outbound  
5 TDM stream] the TDM block identification information into the header [a second field] of [an] the  
6 Ethernet [frame] packet.

1 3. (Amended) The method of Claim 1 wherein packetizing includes:  
2 writing data from the inbound TDM stream to a first buffer; and  
3 writing data from the inbound TDM stream to a second buffer while [at least one TDM  
4 frame] the data stored in the first buffer is written into the Ethernet packet.

1 4. (Amended) A method comprising:  
2 accepting a first [TDM], inbound Time Division Multiplexing (TDM) stream into a switch  
3 having an Ethernet backplane, the first TDM stream including [a plurality of TDM frames]data;  
4 writing [a TDM frame] the data into an Ethernet [frame]packet;  
5 writing TDM block identification information into the Ethernet packet;  
6 sending the Ethernet packet [frame to a destination of the TDM frame] over the Ethernet  
7 backplane; and  
8 [extracting the TDM frame from the Ethernet frame; and]  
9 writing the data from the Ethernet packet into[sending] a second, outbound TDM stream[,  
10 including the TDM frame, from the switch].

1 6. (Amended) The method of Claim 4 further comprising:  
2 writing data from the first TDM stream to a first buffer; and  
3 writing data from the first TDM stream to a second buffer while [at least one TDM frame]  
4 the data stored in the first buffer is written into the Ethernet [frame]packet.

1 7. (Amended) The method of Claim 4 further comprising:  
2 writing [at least one of the extracted TDM frames] the data from the Ethernet packet to a  
3 first buffer; and

4 writing [at least one of the extracted TDM frames] the data from the Ethernet packet to a  
5 second buffer while [at least one of the extracted TDM frames] the data stored in the first buffer is  
6 [included in] written into the second TDM stream.

1 9. (Amended) The method of Claim [8]4 wherein the [TDM frame]data is written into  
2 a first field in the Ethernet [frame]packet and the [destination information and identifying] TDM  
3 block identification information [are]is written into a second field in the Ethernet-[frame]packet.

1 10. (Amended) A switch with an Ethernet backplane, comprising:  
2 a bus; and  
3 at least one line card connected to the bus, each line card including:  
4 circuitry to write [TDM frames]data from an incoming [TDM] Time Division Multiplexing  
5 (TDM) stream into Ethernet [frames]packets,  
6 circuitry to write TDM block identification information into the Ethernet packets;  
7 circuitry to send the Ethernet [frames to a destination of the TDM frames]packets over the  
8 backplane;  
9 [circuitry to extract the TDM frames from the Ethernet frames once the Ethernet frames  
10 arrive at the destination of the TDM frames;] and  
11 circuitry to [send] write the data from the Ethernet packets into an outgoing TDM stream  
12 [including the extracted TDM frames].

1 11. (Amended) The switch of Claim 10 wherein each line card further includes:  
2 a first buffer and a second buffer to double buffer the incoming and outgoing [TDM] data.

1 13. (Amended) The switch of Claim [12]10 wherein each line card further includes:  
2 circuitry to write the [TDM frames]data into a first field in the Ethernet [frame]packet, and  
3 circuitry to write the [destination information and identifying] TDM block identification  
4 information into a second field in the Ethernet [frame]packet.

Claims 5, 8, and 12 have been cancelled.

Claims 14 and 15 have been added.